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mercial implementations of the present invention, and are therefore without limit. The following description of FIG. 1 provides an exemplary embodiment of a flexible display foil of the present invention incorporating the aforementioned first inventive principle of the present invention.

As illustrated in FIG. 1, a flexible display foil 20 employs a flexible display 21 and a display cover 22 integrated relative to a display section 23 of display cover 22. An attachment section 24 of display cover 22 facilitates a coupling of flexible display foil 20 to a stick in any conventional manner. The dimensions of attachment section 24 can be selected to be less than, equal to or greater than a perimeter of the stick. Additionally, a portion of attachment section 24 can be coupled to an external surface and/or an interface surface of the stick, and/or a portion or an entirety of attachment section 24 can be permanently wrapped around the stick. An optional control section 25 of display cover 22 facilitates a construction of a keyboard or any other type of mechanism for controlling flexible display 21 as needed.

A second inventive principle of the present invention is to structurally configure a hinged frame having a curvilinear configuration for fixing a flexible display in a storage position with respect to a stick when the flexible display is wrapped around the stick (i.e., a body having a tubular configuration having a circular, elliptical, rectangular with rounded corners, square with rounded corners or any other curvilinear cross-section). The hinged fringe is further structurally configured under the second inventive principle of the present invention to have a planar configuration for fixing the flexible display in an operational position with respect to the stick when the flexible display is unwrapped from around the stick (i.e., a flat and straight configuration of a viewing screen of the flexible display within a single plane).

The present invention does not impose any limitations or restrictions to the structural configuration and material composition of a hinged frame of the present invention. Thus, in practice, the specific implementations of a hinged frame of the present invention is dependent upon the commercial implementations of the present invention, and are therefore without limit. In one embodiment, a hinged frame of the present invention employs one or more rigid base supports and one or more hinge supports for supporting a flexible display. The following description of FIG. 2 provides an exemplary embodiment of a hinged frame employing two (2) rigid base supports and two (2) hinge supports.

Referring to FIG. 2, a hinged frame 30 of the present invention partially encircling flexible display foil 20 with attachment section 24 being unobstructed by hinged frame 30. Hinged frame 30 employs two (2) rigid base supports 31 and 32 and two (2) hinge supports 33 and 34, with each support 31-34 vertically extending across flexible display foil 20. Hinge support 33 is hinged to rigid base support 31 whereby hinge support 33 is pivotable relative to rigid base support 31. Hinge support 33 may also be hinged to a stick whereby hinge support 33 would be additionally pivotable relative to the stick. Hinge support 34 is hinged to rigid base supports 31 and 32 whereby hinge support 33 is pivotable relative to rigid base supports 31 and 32.

To further illustrate the pivotal interaction between the rigid base supports and the hinge supports of a hinged frame in accordance with the of the present invention, FIG. 3 illustrates three (3) display segments DS1-DS3 of a flexible display in a curvilinear profile of the flexible display involving display segments DS1 and DS3 having a planar shape and display segment DS2 being in a curved shape of an approximately constant radius R1 designed to uniformly wrap display segment DS2 around a stick. With “approximately con-

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stant radius R1” is meant that although preferably the radius R1 of the display segment DS2 may be constant, the radius may show a deviation of about max 35% between the connection with the neighboring display segment (DS1, DS3) and the middle of the display segment DS2 between both connections. With this deviation the profile of the display segment DS2 is adapted to that of the end portion of the stick and it is still possible to uniformly wrap display segment DS2 around the stick. A larger deviation will result in too large risk of damage of the display and for an unacceptable volume of the stick. For manufacturing reasons the deviation of R1 is about 3-6%. Alternatively, the display segment DS2 may show a substantially elliptical arch with locally a smaller, approximately constant R1 from the connection with the neighbouring display segment DS1, DS3 and a larger R1 in the middle of segment DS2. Also in this configuration the profile of the display segment is adapted to the profile of the end portion of the stick that shows a somewhat flattened surface at the top. Conversely, FIG. 4 illustrates the flexible display in a planar profile involving all of the display segments DS1-DS3 having a planar shape. Referring to FIGS. 3 and 4, display segments DS1 and DS3 are to be adjacent and attached to rigid base supports of a hinged frame and therefore will always be in planar profile irrespective as to whether the flexible display is wrapped around a stick or unwrapped from around the stick. By contrast, display segment DS2 is to be adjacent and unattached to a hinge support of the hinged frame. As such, an identification of attachment points AP1 and AP2 as endpoints of display segment DS2 is essential to ensure that display segment DS2 is uniformly stowed over its entire length L1 within an adjacent hinge support in response to being in the curvilinear profile shown in FIG. 3 and to ensure that display segment DS2 is flat and straight over its entire length L1 relative to the adjacent hinge support in response to being in the planar profile shown in FIG. 4.

Specifically, FIG. 5 illustrates a hinge support having an arch segment AS1 hinged to a rigid base support BS1 at a hinged point HP1 and an arch segment AS2 hinged to a rigid base support BS2 at hinged point HP3 with arch segments AS1 and AS2 being hinged at hinge point HP2. A distance D1 between hinge points HP1 and HP3 extends across arch segment AS1. A distance D2 between hinge points HP2 and HP3 extends across arched segment AS2. A distance D3 (shown in FIG. 6) between attachment point AP1 and hinge point HP1 extends along rigid base support BS1 whereby $D3 \geq 0$. And, a distance D4 (shown in FIG. 6) between attachment point AP2 and hinge point HP3 extends along rigid base support BS2 with distance D4 preferably equaling distance D3.

A summation of distances D1-D4 must equal length L1 of display segment DS2 to ensure display segment DS2 is uniformly stowed over its entire length L1 within arch segments AS1 and AS2 when display segment DS2 has the curved shape shown in FIG. 5 based arch segments AS1 and AS2 being in a closed state, and to ensure that display segment DS2 is flat and straight over its entire length L1 relative to arch segments AS1 and AS2 when display segment DS2 has the planar shape shown in FIG. 6 based on arch segments AS1 and AS2 being in an open state. Those having ordinary skill in the art will appreciate a wrapped radius of arch segment AS1 and arch segment AS2 is based on the wrapped radius R1 of display segment DS1 (FIG. 3) and is determinative of distances D3 and D4.

By further example, FIGS. 7 and 8 illustrate a hinge support having a single arch segment AS3 hinged to rigid base support BS1 at a hinged point HP4 and hinged to rigid base support BS2 at hinged point HP5. A distance D5 between hinge points HP4 and HP5 extends across arch segment AS3.